UNITED
NATIONS

A

General Assembly

Distr.
GENERAL

A/AC.237/NC/1
4 October 1994

Original: ENGLISH

INTERGOVERNMENTAL NEGOTIATING COMMITTEE
FOR A FRAMEWORK CONVENTION ON CLIMATE CHANGE

EXECUTIVE SUMMARY OF THE NATIONAL COMMUNICATION OF

UNITED KINGDOM

submitted under Articles 4 and 12
of the
United Nations Framework Convention on Climate Change

In accordance with decision 9/2 of the Committee, the interim secretariat is to make available, in the official languages of the United Nations, the executive summaries of the national communications submitted by Annex I Parties.

GE.94-64622

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UNITED KINGDOM

Introduction

1. This is the executive summary of the United Kingdom's first communication under Article 12 of the United Nations Framework Convention on Climate Change (the Convention).

2. The UK signed the Convention in June 1992 and ratified it in December 1993. The UK's report was published in January 1994 and presented to the Ninth Session of the Intergovernmental Negotiating Committee (INC). The report, entitled "Climate Change: The UK Programme", sets out the programme of measures that the UK Government is committed to take as a developed country party to the Convention. This summary of the report is produced in accordance with the guidelines issued pursuant to Decision 9/2 of the Ninth Session of the INC.

Inventory Data

SUMMARY OF INVENTORY DATA

3. An inventory of UK emissions for 1990 by source category is at Annex 1. This is a slightly revised version of the table at Annex B.1. of the UK report, taking account of the latest IPCC guidelines.

INVENTORY METHODOLOGIES

4. The UK emissions inventory has been published annually since 1987. The inventory is also used to fulfil the data requirements associated with the UNECE Convention on Long Range Transboundary Air Pollution. Its methodologies reflect this historical development. In general UK specific data rather than IPCC default values are used for emission factors and other inputs. But UK specialists are closely involved in the coordinated efforts by UNECE, CORINAIR and IPCC to compare and develop inventory methodologies and this ensures convergence.

5. The main differences from the IPCC methodology are that some aviation bunker emissions are included in the national total, whilst CO_2 emissions from offshore oil and gas platforms are excluded. Also an estimate of CO_2 emissions from wetland drainage and peat extraction is given, but this is not covered by IPCC source categories. Further details are given in the key to the table in Annex 1.

6. Uncertainties due to emission factors for CO_2 from fossil fuel combustion are unlikely to exceed a few percent, and the fuel consumption data are compatible with IEA statistics, and have similar levels of uncertainty. The UK has estimated uncertainties for methane emissions by using Monte Carlo analysis to combine expert judgements about uncertainty in emission factor and activity data. This has been done for all major methane source categories and the overall best estimate was 5 million tonnes with 95% of trials falling between 4 and 6 million tonnes.

Uncertainty on nitrous oxide emissions is dominated by uncertainty in the emissions for agricultural soils and animal wastes, which range by two orders of magnitude from the lowest to the highest estimate.

7. Emissions figures for the remaining gases covered in the UK inventory have estimated uncertainties as follows:

NOX	±30%
CO	±40%
VOC	±50%

These estimates were made by Monte Carlo analysis to combine emission factor and activity data for mobile sources, and simple expert judgement for other sources.

Policies and Measures

OVERALL POLICY CONTEXT

8. The UK accepts the obligations of a developed country party to the Convention, including the commitment to take measures aimed at returning emissions of greenhouse gases to 1990 levels by the year 2000. The UK has therefore prepared a detailed programme of measures designed to achieve this commitment for each of the main greenhouse gases and to fulfil the other commitments in the Convention, including those on assistance to developing countries, protecting and enhancing carbon sinks, supporting research into climate change and promoting public education and awareness. The centrepiece of the programme is the set of measures designed to limit emissions of carbon dioxide (CO_2), the most important greenhouse gas.

9. The UK's programme is based around the precautionary approach laid down in the Convention. The work of the Intergovernmental Panel on Climate Change (IPCC) has shown that the threat of climate change is such that it is appropriate to take action ahead of unequivocal evidence being established about the nature and possible effects of man-made climate change. The UK programme takes advantage of the considerable scope that exists for taking cost-effective action now. It also emphasises the importance of exploring the full range of policy tools available, including economic instruments, regulatory measures, voluntary action and public information.

10. The Government has been concerned to encourage commitment to the UK's programme by seeking public participation in drawing it up. A discussion document was widely circulated and the ensuing debate examined the part individuals, businesses and the public sector could play in limiting emissions, as well as the options for Government measures to support such action. A clear view emerged from the consultation process that the Government must provide a

lead and set the basic legislative and fiscal framework for the national programme. This would provide the right conditions within which others could act. This is an important element of the UK's partnership approach.

BRIEF SUMMARY OF KEY POLICIES

11. The policies and measures described in chapters 3 - 6 of the UK report are listed in Table 1 below. It should be noted that the quantification of the expected effects for measures in the CO_2 programme is not additive. There will also be overlap between supply-side and demand-side measures. Table 2 below gives the expected CO_2 savings by sector allowing for overlap, and allocating expected savings in electricity generation to final users.

Projections and Assessment of Effects

CO_2, CH_4 & N_2O

12. The reference scenario selected for the UK's programme is roughly in the centre of a range of estimated possible outcomes for the year 2000, indicating that emissions could be around 10MtC higher in that year than in 1990, if no mitigating measures are taken. The current target being used in this programme is, therefore, a reduction in projected CO_2 emissions of around 10MtC (6%) by 2000, to aim to return emission to their 1990 level.

13. For CH_4, working estimates suggest a without measures increase in emissions of around 5% by 2000 from the 1990 level of 5 Mt. The programme aims at an overall reduction in CH_4 emissions of about 0.6 Mt, or around 10% below 1990 levels by the year 2000.

14. The UK inventory shows N_2O emissions to have been 0.11 Mt in 1990. If no new measures were taken, it is expected that this level would fall slightly by 2000. However, the programme measures are expected to reduce N_2O emissions from about 0.11 Mt in 1990 to 0.03 Mt in 2000, a fall of 75%.

15. In addition, it is expected that the measures in the programme will lead to a 25% fall in nitrogen oxide emissions, a 35% fall in volatile organic compound emissions, a 50% fall in carbon monoxide emissions, the elimination of halocarbon emissions such as chlorofluorocarbons, and a 90% fall in perfluorocarbon emissions such as carbon tetrafluoride and hexafluoroethane.

16. The UK programme should reduce emissions of each of the main greenhouse gases to 1990 levels or below by the year 2000. Taken together, using direct GWPs for CO_2, CH_4, N_2O and PFCs from IPCC 1992, this would amount to an overall reduction of some 5% of radiative forcing of greenhouse gases from the UK between 1990 and 2000 (see Figure 1). (HFCs are not included in this calculation as data are still being compiled).

METHODOLOGIES AND APPROACHES ON PROJECTION (INCLUDING KEY ASSUMPTIONS AND UNCERTAINTY)

17. For CO_2 the UK government has produced a range of projections indicating possible longer-term trends in emissions to 2020, in the absence of measures. The range is derived from economic and statistical analysis of the energy market. The range reflects different assumptions about possible future fuel prices and economic growth. It indicates the uncertainties in how longer-term trends in CO_2 emissions could develop. In order to provide a focus for the development of a programme to meet the Convention commitment, the UK selected a representative scenario from roughly in the centre of the range for 2000. The reference scenario is based on fairly stable energy prices and economic growth at the historic rate of about 2.25% a year. Under this scenario CO_2 emissions rise to some 10MtC above the 1990 emissions level by 2000.

18. For methane and nitrous oxide, uncertainty in emissions in future years will be dominated by uncertainty in emissions estimation. An indication of the range is therefore given in the discussion of inventory uncertainties in paragraph 6 above. The UK's working estimates for these gases are derived from the inventory analysis with activity data projected forward and emission factors modified to take account of mitigation measures introduced.

19. NO_x, CO and VOC estimates are also projected on the basis of the inventory analysis, with fuel consumption where needed as activity data consistent with the CO2 projections, and allowance made for the effect on emission factors of domestic and international undertakings on emissions reduction.

Finance and Technology

CONTRIBUTIONS TO FINANCIAL MECHANISM

20. The UK contributed £40.3 million to the Pilot Phase of the Global Environment Facility (GEF) for the three years to July 1994. In March 1994 the UK contributed a further £89.5 million to the restructured and replenished GEF for the period July 1994 - June 1997. This makes the UK the fifth largest contributor to the Fund.

BILATERAL, REGIONAL AND MULTILATERAL AID

21. The UK's bilateral assistance to developing countries stands at more than £1 billion a year. In 1992/93 over £124 million was spent on projects with total commitment values over £100,000 where environmental protection was a major objective. More than £46 million went to energy efficiency projects and over £21 million was spent on sustainable forestry management projects. UK aid in the forestry sector now supports about 200 projects, either underway or in preparation, at a total cost to the aid programme of about £150 million. The UK has also provided a total of more than £3.5 million for climate change studies in Bangladesh, Brazil, Ghana, Kenya and Zimbabwe.

22. Current energy efficiency projects include a £90 million scheme to improve efficiency of energy production and transmission in Western and Southern India, a £64 million soft loan agreement with Indonesia to construct a fuel efficient gas-fired combined cycle power station and aid to China to help identify ways of reducing environmental damage caused by the energy needs of local industry and housing.

23. The UK also provides dedicated aid to Eastern Europe through the Know How Fund (KHF), which administers a three year £5 million programme targeted at environmental problems in Eastern and Central Europe, the Former Soviet Union and Baltic States.

24. In 1993/94 the UK also provided £860 million to multilateral and regional assistance programmes including the World Bank Group, the UN Agencies, the European Community and the Regional Development Banks, all of which fund projects in developing countries related to the objectives of the Convention. The UK contributed 16% of the cost of the EC's £850 million PHARE programme of assistance to Central and Eastern Europe.

TRANSFER OF TECHNOLOGY

25. Assistance for the transfer of technology includes the three year Technology Partnership Initiative launched in March 1993 to improve conditions for increasing successful transfers of environmental technologies to developing countries on a commercial basis; contributions (with 13 other countries) to the OECD/IEA Greenhouse Gas Technology Exchange (GREENTIE); and contributions to the EC's European Investment Partners Scheme which facilitates technology transfer with Asian, Latin American and Mediterranean countries.

Other matters

VULNERABILITY ASSESSMENT AND ADAPTATION MEASURES

26. A comprehensive study of potential impacts to the UK has been completed by the UK Climate Change Impacts Review Group. Their report, "The Potential Effects of Climate Change in the UK", published in 1991 includes the effect of climate change on sea level, soils, flora, fauna and landscape, agriculture, coastal regions, the water industry, energy, minerals extraction, manufacturing, construction, transport, the financial sector, recreation and tourism. The Government continues to fund major research projects to assess the possible impacts of climate change in the UK, in particular through the Natural Environment Research Council (NERC) and the Agriculture and Food Research Council. Part of this work aims at assessing the potential impacts of climate change in terms of crop growth, pest and disease incidence and the opportunities and challenges which might arise as a result of changes in agricultural markets elsewhere in the world. MAFF also sponsors work on the impacts of and possible response to sea level rise, and monitors sea level changes.

27. The UK will also assist developing countries that are especially vulnerable to the adverse effects of climate change with the costs of adaptation to those adverse effects.

RESEARCH AND SYSTEMATIC OBSERVATION

28. The UK has led the Science Assessment, Working Group I of the IPCC since its inception in 1988 through the chairmanship (now joint chairmanship) of Sir John Houghton and the provision of its technical secretariat. The UK also supports contributions by scientists, economists and other specialists to the IPCC's work on assessing climate change impacts and adaptation and response strategies. In addition the UK contributes to the financing of research programmes carried out by the World Meteorological Organisation, the United Nations Environment Programme, the Intergovernmental Oceanographic Commission and the International Council of Scientific Unions.

29. UK spending on climate change research has increased by over 50% from £90 million to £140 million in the 4 years from 1989/90 - 1992/93. Research is coordinated by the Inter-Agency Committee on Global Environmental Change (IACGEC) which has established the UK Global Environmental Network for Information Exchange (GENIE) as the node of a distributed network of UK natural and social science global environmental change data holdings. The Government supports the NERC, the Meterological Office (including the Hadley Centre for Climate Prediction and Research) and independent research bodies such as the Climatic Research Unit at the University of East Anglia. These organisations are at the forefront of progress in climate change monitoring, modelling, prediction and research.

EDUCATION, TRAINING AND PUBLIC AWARENESS

30. Since 1990 the UK has spent some £130 million on energy and fuel efficiency awareness and advice. This includes the Energy Efficiency Office's advice schemes and publicity programmes, the CO_2 partnership programme, fuel efficiency information and funding of specific projects by non-governmental organisations. These schemes involve businesses and the public sector through the CO_2 partnership programme ('Making a Corporate Commitment', energy advice and information Energy Management Assistance scheme for small businesses and Energy Design Advice Scheme). They also target private citizens through publicity campaigns such as 'Helping the Earth Begins at Home', the production of leaflets such as 'Motoring and the Environment' and the booklet 'New Car Fuel Consumption', and the provision of information packs for school projects.

Special considerations

31. The UK seeks no special consideration under Articles 4.6 or 4.10 of the Convention.

TABLE 1: BRIEF SUMMARY OF KEY POLICIES

Gas	Sector	Policy or measures	Objective	Instrument type	Status	Intermediate progress indicators	Estimated saving in 2000 (approx)
CO2 emissions	domestic (residential)	introduction of VAT on domestic fuel	increase efficient use of domestic fuel	economic	1st stage in place (8% VAT); 2nd stage due 1 April 1995 (17.5% VAT)		1.5MtC
		Energy Saving Trust	increase efficient use of domestic fuel	economic	Trust established		2.5MtC
		energy efficiency advice/information	increase efficient use of domestic fuel	information/ education	in place		reinforces other programmes
		eco-labelling and energy labelling	increase consumer awareness of energy efficiency	information/ education	EC schemes in place		not yet known
		EC boiler standards Directive	increase energy efficiency of boilers	regulatory	in place		0.15MtC (incl. business)
		extension of EC SAVE programme	increase energy efficiency of consumer goods	regulatory	in preparation		0.35MtC
		revision of Building Regulations	increase energy efficiency of house design	regulatory	in place		0.15MtC
	business (industrial/ commercial)	Making a Corporate Commitment Campaign + Regional Energy Efficiency Offices	increase energy efficiency of business	information/ education/ voluntary action	in place		0.5MtC
		Energy Management Assistance Scheme & Best Practice Programme	increase energy efficiency of small businesses	information/ education/ voluntary action	in place		0.8MtC
		Energy Saving Trust schemes for small businesses	increase energy efficiency of small businesses	economic	in preparation		incl. in domestic sector

Gas	Sector	Policy or measures	Objective	Instrument type	Status	Intermediate progress indicators	Estimated saving in 2000 (approx)
CO2 emissions		Energy Design Advice Scheme	increase energy efficiency of new/refurbished business premises	information/ education	in place		0.2MtC
		possible EC SAVE programme	increase energy efficiency of office/commercial equipment	regulatory	under discussion		not yet known
		revision of Building Regulations	increase energy efficiency of business buildings	regulatory	in place		0.1MtC
	public sector	targets for energy efficiency	increase energy efficiency of public sector	government/ voluntary action	target set		1.0MtC
	electricity generation/ supply	increase figure for renewables to 1500MW by 2000	reduce CO2 emissions	regulatory	figure set		0.5MtC
		increase target for CHP to 5000MW by 2000	increase energy efficiency	government/ voluntary action	target set		1.0MtC
	transport	19-21% increase in road fuel duties in 1993	reduce fuel consumption & CO2 emissions of road transport	economic	in place		
		5% annual real increase in road fuel duties in future years	reduce fuel consumption and CO2 emissions of road transport	economic	government commitment		2.5MtC
		new land use and transport planning guidance (PPG 13)	increase transport efficiency of new developments/reduce need to travel	regulatory/ government guidance	in place		not yet known
		traffic management schemes	increase energy efficiency of road transport/encourage use of public transport	government action	ongoing		not yet known

Gas	Sector	Policy or measures	Objective	Instrument type	Status	Intermediate progress indicators	Estimated saving in 2000 (approx)
CO2 emissions		advice to motorists eg 'New Car Fuel Consumption' booklet	buyer awareness	government/ voluntary action	in place		not yet known
CO2 sinks	forestry	afforestation	increase CO2 sinks	economic (government subsidy)	ongoing		2.5MtC (uptake by new forests)
CH4 emissions	landfill	promoting waste minimisation and recycling	reduce landfill waste	partnership/ regulatory	in place		
		increasing energy recovery through use of waste	reduce landfill waste	regulatory	in place		
		landfill levy	reduce landfill waste	economic	under discussion		0.7Mt
		revision of waste management licensing arrangements	reduce landfill waste/control emissions from landfill sites	regulatory	in preparation		
		revision of planning policy guidance	enhance pollution control measures and energy recovery	regulatory	in place		
	agriculture	reform of Common Agricultural Policy	reduction in dairy herds	economic	in place		0.1Mt
	coal mining	methane utilisation	reduce methane emissions	voluntary action	ongoing		not yet known
	gas distribution	leakage reduction	reduce methane emissions	voluntary action	ongoing		0.05Mt

Gas	Sector	Policy or measures	Objective	Instrument type	Status	Intermediate progress indicators	Estimated saving in 2000 (approx)
N2O emissions	industry	pollution control	reduce nitrous oxide emissions from nylon industry	regulatory/ voluntary action	in place		60kt
	agriculture	reform of Common Agricultural Policy	reduced use of fertilizers	economic	in place		1.4kt
NOX emissions	energy	EC Large Combustion Plants Directive	reduce NOX emissions from power generation	regulatory	in place		0.3Mt
	transport	EC vehicle emission standards	reduce NOX emissions from vehicles	regulatory	in place		0.4Mt
VOC emissions	industry	Environment Protection Act 1990	reduce VOC emissions	regulatory	in place		0.55Mt
	transport	EC vehicle emissions standards	reduce VOC emissions from vehicles	regulatory	in place		0.55Mt
CO emissions	transport	EC vehicle emissions standards	reduce CO emissions from vehicles	regulatory	in place		3.5Mt
HFC emissions	industry	waste disposal controls	control HFC disposal	regulatory	in place		not yet known
		emission reduction in HCFC manufacture	reduce HFC emissions	regulatory/ voluntary action	under discussion		not yet known

Gas	Sector	Policy or measures	Objective	Instrument type	Status	Intermediate progress indicators	Estimated saving in 2000 (approx)
HFC emissions		voluntary controls on emissions from HFC usage	reduce HFC emissions	voluntary action	under discussion		not yet known
CF4 & C2F6 emissions	industry	pollution control	reduce CF4 and C2F6 emissions from aluminium industries	regulatory/ voluntary action	programme in place		270t

TABLE 2: SUMMARY OF CO2 SAVINGS

Sector	Measure	Expected reduction in emissions by 2000, MtC
Energy consumption in the home		4
	- introduction of VAT on domestic fuel	
	- new Energy Saving Trust	
	- energy efficiency advice/ information, including Helping the Earth Begins At Home publicity	
	- eco-labelling	
	- EC SAVE programme (standards for household appliances)	
	- revision of Building Regulations to strengthen energy efficiency requirements	
Energy consumption by business		2.5
	- energy efficiency advice/ information: - Making a Corporate Commitment - Best Practice Programme - Regional Energy Efficiency Offices - Energy Management Assistance Scheme	
	- Energy Saving Trust schemes for small businesses	
	- Energy Design Advice Scheme	
	- possible EC SAVE programme (standards for office machinery)	
	- revision of Building Regulations to strengthen energy efficiency requirements	
Energy consumption in the public sector		1
	- targets for central and local government and public sector bodies	
Transport		2.5
	- increases in road fuel duties and commitment to real increases of at least 5% on average in future Budgets	
Total		**10**

ANNEX 1: SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (1990)

SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (PART 1) (Gg)							
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 as C	CO_2	CH_4	N_2O	NO_x	CO	NMVOC
Total (Net) National Emission	158255	580268	4844	109, j	2779	6701	2691, m
1. All energy (fuel combustion and fugitive)							
A. Fuel Combustion Activities							
Energy and Transformation Industries	62669	229784	5	d	835	57	14
Industry (ISIC)	25869	94851	7	d	183	63	2
Transport	32913, c	120681, c	11	8	1559, c	6066, c	1142, c
Commercial/institutional	8296	30419	2	d	56	8	1
Residential	21797	79922	49	d	68	286	40
Agriculture/Forestry	733	2688	0.1	d	4	1	0.1
Other	d	d	(3)	3, k	d	d	d
Biomass Burning for Energy	(e)	(e)	(e)	(e)	(e)	(e)	(e)
B. Fugitive fuel emissions							
Oil and Natural Gas Systems	1545, r	5665, r	481	(e)	51	1	308
Coal Mining			756				(e)
2. Other industrial production processes (ISIC)							
A. Iron and steel							
B. Non-ferrous metals							
C. Inorganic chemicals					9		
D. Organic chemicals			(5)	80			295
E. Non-metallic mineral products	2024	7421					
F. Other	1659,f	6084, f	0.5		12	220	38

SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (PART 2) (Gg)							
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 as C	CO_2	CH_4	N_2O	NO_x	CO	NMVOC
3. Solvent use							
A. Paint Application			(e)	(e)	(e)	(e)	278
B. Degreasing and Dry Cleaning			(e)	(e)	(e)	(e)	57
C. Chemical Products Manufacture / Processing			(e)	(e)	(e)	(e)	40
D. Other			(e)	(e)	(e)	(e)	377
4. Agriculture							
A. Enteric Fermentation			1077				
B. Animal Wastes			485, q	14, l			
C. Rice Cultivation			na	na			
D. Agricultural Soils			h	4, l			
E. Agricultural Waste Burning			(18)	0.2			
F. Savannah Burning	na	na	na	na	na	na	
5. Land-use Change and Forestry							
A. Forest Clearing and On-site Burning of Cleared Forests	na	na	na	na	na	na	
B. Grassland Conversion	(0±500, g)	(0±1883,g)					
C. Abandonment of Managed Lands	(t)	(t)					80, m
D. Managed Forest	(-2500)	(-9167)					
C. Other	n	n					
6. Waste							
A. Landfills	750, v	2750, v	1900				19
B Waste water			71, i				
C Other	n	n					n

Key to Table

Numbers in columns may not add up due to rounding

() Entries in parenthesis means that the source category does not contribute to the National Emissions total at the top of the table.

na Not applicable to UK

a Expressed as NO2 equivalents

b Excluding methane

c Includes emissions due to aircraft ground movements and landing and take-off cycle up to 1km and from UK shipping in coastal waters (<12 miles). For carbon dioxide, these emissions are 713 GgC and 944 GgC respectively.

d Included under commercial/institutional

e Not estimated, but thought to be small

f Incineration

g See paragraph B and 4.10 in the main Report

h Agricultural soils could be a net sink of methane

i Latest estimates from the Water Services Association suggest that methane emissions from the disposal of sewage sludge may be overestimated by up to 20%.

j UK-NAEI estimate for current nitrous oxide emissions of 175 Gg includes emissions from all soils. No time series is given.

k All fuel combustion except vehicles.

l New IPCC background material applied to the UK gives 3.5 Gg for nitrous oxide from animal wastes, 5.7 Gg from fertiliser application to agricultural soils, and 1.3 Gg from biological fixation of nitrogen by agricultural crops and grassland. UK-NAEI unpublished revised estimate is 40 Gg total flux of N2O from all UK soils including the natural background emissions from non-agricultural soils.

m Total does not include natural emissions from forest growth of 80 Gg.

n Included elsewhere.

p Included under other fuel combustion.

q New IPCC background material gives 109 Gg for UK methane emissions from animal wastes.

r Includes emissions from gas flaring but excludes other emissions from offshore platforms.

s Wetland drainage and peat extraction.

t Included under grassland conversion.

v Landfill gas flaring included in total CO2 emissions although some may be of biogenic origin.